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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,099	12/31/2003	Anees Narsinh	134170	1338
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ALCATEL-LUCENT C/O GALASSO & ASSOCIATES, LP P. O. BOX 26503 AUSTIN, TX 78755-0503			EXAMINER SHIN, KYUNG H	
			ART UNIT 2443	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/751,099

**Applicant(s)**

NARSINH ET AL

**Examiner**

Kyung Hye Shin

**Art Unit**

2443

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is responding to application amendments filed on 11-19-2008. Claims **1 - 12** are pending. Claims **1, 2** have been amended. Claims **1, 2** are independent. This application was filed on 12-31-2003.

### ***Response to Arguments***

2 Applicant's arguments filed 11-19-2008 have been fully considered but are moot due to new grounds of rejection.

### ***Claim Rejections - 35 USC § 103***

**The text of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

3. Claims **1 - 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Crinion et al.** (US Patent No. **6,181,699**) in view of **Hussain et al.** (US Patent No. **7,161,904**) and further in view of **Denney et al.** (US PG PUB No. **20030061623**) and further in view of **Hoffman et al.** (US Patent No. **6,940,814**).

**Regarding Claim 1**, Crinion discloses a data link layer processor comprising:  
one or more media access controllers (MACs); (Figure 8; col 5, ll 66-67; col 6, l 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input and output)

In addition, Crinion discloses a MAC buffer (Col 5, ll 42-47: packet buffer (MAC buffer)),

a VLAN push module and a VLAN pop module (Col 6, ll 59-64: queue management; push: placement of frame onto queue; removal of frame from queue). And, Crinion discloses wherein having a flow search engine with an ingress CAM. (Col 1, ll 52-60: CAM stores tagging information, tagging information includes lookup data and associated tag data; col 1, ll 58-60: search circuit is connected to CAM; col 6, ll 4-8: frame processed by receive CAM; assign a VLAN tag based upon source and destination addresses or protocol information)

Crinion does not explicitly disclose that each MAC includes a MAC preprocessor and a MAC postprocessor. And, Crinion does not explicitly disclose a traffic policer; first rate buffer, and an ingress bus transmitter, an ingress bus receiver, and a second rate buffer. However, Denney discloses:

- a) each of said one or more MACs includes a MAC preprocessor and a MAC postprocessor, (Denney ¶ 052, ll 1-4: MAC preprocessor, postprocessor) and

And, Hussain discloses:

a traffic policer (Hussain col 4, ll 42-43: ; col 7, ll 36-39: ingress policing), a first rate buffer (Hussain col 4, ll 44-50: col 7, ll 5-11: rate control based on the flow to which packet belongs (packet flow, packet buffering)), an ingress bus transmitter (Hussain col 8, ll 31-33; col 8, ll 38-41: ingress processor (transmitter)); an egress bus receiver (Hussain col 8, ll 31-33; col 8, ll 38-41: egress processor (receiver)), and a second rate buffer (Hussain col 4, ll 44-50: col 7, ll 5-11: rate control based on the flow to which packet belongs (packet flow, packet

buffering)).

Crinion does not explicitly disclose a traffic shaper for discarding one or more frames that exceed a bandwidth requirement. And, Crinion does not explicitly disclose ingress control logic; an ingress meter module; and a mark generator.

And, Crinion does not explicitly disclose a first parser. However, Hussain discloses:

- b) a traffic shaper for discarding one or more frames that exceed a bandwidth requirement prior to transmission to the MACs. (Hussain col 9, ll 57-64; col 10, ll 14-16: discards frames that do not conform to bandwidth requirements, rate limit egress (output) flow: must drop packet prior to transmission to output queue or MACs)

And, Hussain discloses:

an ingress discard control logic (Hussain col 9, ll 57-61; col 10, ll 14-16: drop (discard) frames selectively (based on criteria)),

an ingress meter module (Hussain col 6, ll 62-65: perform ingress metering, egress metering; col 9, ll 41-51: meter packet flows for particular services)

a mark generator (Hussain col 6, 65-67: hardware based metering and marking to assist in rate control capabilities of system; col. 7, ll 3-13: rate control that includes packet rate metering, marking and dropping functions; rate metering and marking implemented substantially in hardware for each packet flow; col 7, ll 15-19; col 10, ll 1-3: mark frames based on TCM algorithm (discard, do not discard))

And, Hoffman discloses:

wherein discloses a first parser. (Hoffman col. 7, ll 52-62: parses an incoming packet to determine various characteristics about the packet)

It would have been obvious to one of ordinary skill in the art to modify Crinion where each MAC includes a MAC preprocessor and a MAC postprocessor as taught by Denney, and to modify For a traffic policer; first rate buffer, and an ingress bus transmitter, an ingress bus receiver, a second rate buffer and for discarding one or more frames that exceed a bandwidth requirement prior to output as taught by Hussain, and for a first parser as taught by Hoffman. One of ordinary skill in the art would have been motivated to employ the teachings of Denney in order to increase packet throughput capacity and sustain performance (Denney ¶ 017, ll 1-3: “ ... *Therefore, a system and method that increase packet throughput capacity and sustain performance are needed to address the above problems. ...* ”), and to employ the teachings of Hussain in order to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment (Hussain col 1, ll 33-36: “ ... *In the case of a multi-client network, for example, it may be desirable to meter and/or identify customers, or certain groups of customers, that are oversubscribing (e.g., using more than their allocated bandwidth). ...* ”; col 1, ll 43-49: “ ... *Thus there is a general need for an improved system and method for performing metering in a virtual router based network switch. There is also a general need for a system and method for performing metering in a multi-client network that distinguishes between clients and groups of clients. There is also a need for a system and method that supports a fair sharing of communication*

*resources. ...”), and to employ the teachings of Hoffman for a switch or network element that forwards both layer 2 and layer 3 packets quickly and efficiently both within a subnetwork and to other networks. (Hoffman col 4, ll 60-62: “... What is needed is a switch or network element that forwards both layer 2 and layer 3 packets quickly and efficiently both within a subnetwork and to other networks. ...”).*

**Regarding Claim 2,** Crinion discloses a switching device comprising:

- a) one or more physical layer interfaces for transmitting frames to a communication network; (Figure 8; col 8, ll 26-28; col 5, ll 66-67; col 6, l 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input/output)
- c) a plurality of data link layer processors (Figure 8; col 5, ll 26-28; col 8, ll 17-19: data link layer (MAC) processor(s), 802.3 LAN users), wherein each data link layer processor comprises:

Crinion discloses wherein one or more media access controllers (MACs), wherein each MAC is operatively coupled to a physical layer interface; (Figure 8; col 8, ll 26-28; col 5, ll 66-67; col 6, l 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet, 802.3 LAN users) access for data frame) And, Crinion discloses wherein a network processor for routing the frames towards the one or more physical layer interfaces. (Figure 8; col 2, ll 46-54: process (processor) network traffic; col 1, ll 7-10; col 5, ll 17-19: routing data frames)

And, Crinion discloses wherein:

at least one data bus; (Col 5, ll 20-25: functional blocks such as a switch bus interface or data bus; col 5, ll 33-37: switch bus interface transfers data; switch bus interface reads data off the bus and hands data to look up engine)

a management module (Col 3, ll 3-4: memory updated with information by management software)

a queue manager having an ingress queue memory, an egress queue memory (Col 5, ll 12-15: queue manager reassembles packets and loads the appropriate FIFO so packet can be transmitted; col 6, ll 59-64: queue management; push: placement of frame onto queue; removal of frame from queue)

Crinion does not explicitly disclose that each MAC includes a MAC preprocessor and a MAC postprocessor.

However, Denney discloses:

d) each of said one or more MACs includes a MAC preprocessor and a MAC postprocessor, (Denney ¶ 052, ll 1-4: MAC preprocessor, postprocessor) and

Crinion does not explicitly a traffic shaper for discarding one or more frames from the network processor that exceed one or more bandwidth parameters. And, Crinion does not explicitly disclose a classifier, a forward processor and an egress processor. And, Crinion does not explicitly disclose a scheduler.

However, Hussain discloses:



- b) having a classifier, a forwarding processor and an egress processor. (Hussain col 8, ll 56-62; col 7, ll 62-64: classifier, flow classification for packets using header information (properties of packet); col 6, ll 33-36: include a virtual routing processor to provide IP packet forwarding (forwarding processor); col 8, ll 31-33; col 8, ll 38-41: egress unit composed of an array of packet processors; egress processor may share common code)
- e) a traffic shaper, operatively coupled to the one or more MACs, for discarding one or more frames from the network processor that exceed one or more bandwidth parameters prior to transmission to the MACs. (Hussain col 9, ll 57-64; col 10, ll 14-16: discards frames that do not conform to bandwidth requirements, rate limit egress (output) flow: must drop packet prior to transmission to output queue or MACs)

And, Hoffman discloses:

wherein a scheduler. (Hoffman col 20, ll 22-27: a scheduler; to allocate fixed rates to each queue for transmission within output port)

It would have been obvious to one of ordinary skill in the art to modify Crinion where each MAC includes a MAC preprocessor and a MAC postprocessor as taught by Denney, and to modify For a classifier, a forward processor, an egress processor, and a traffic shaper discarding one or more frames that exceed one or more bandwidth parameters as taught by Hussain, and a scheduler as taught by Hoffman. One of ordinary skill in the art would have been motivated to employ the teachings of Denney in

order to increase packet throughput capacity and sustain performance (Denney ¶ 017, ll 1-3), and to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment (Hussain col 1, ll 33-36; col 1, ll 43-49), and to employ the teachings of Hoffman for a switch or network element that forwards both layer 2 and layer 3 packets quickly and efficiently both within a subnetwork and to other networks. (Hoffman col 4, ll 60-62)

**Regarding Claim 3**, Crinion discloses the switching device of claim 2. Crinion does not explicitly disclose the traffic shaper discarding one or more frames in accordance with a Three Color Marker (TCM) algorithm. However, Hussain discloses wherein the traffic shaper discards the one or more frames in accordance with a Three Color Marker (TCM) algorithm. (Hussain col 7, ll 15-19; col 10, ll 1-3: Three Color Marker (TCM) algorithm (RFC 2698) utilized to discard frames based on TCM requirements)

It would have been obvious to one of ordinary skill in the art to modify For a traffic shaper to discard one or more frames in accordance with a Three Color Marker (TCM) algorithm as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 4**, Crinion discloses the switching device of claim 3. Crinion does not explicitly disclose selecting the TCM algorithm from the group consisting of a single rate TCM, a two rate TCM, or a combination. However Hussain discloses wherein the TCM algorithm is selected from the group consisting of: single rate TCM, two rate TCM, and a combination thereof. (Hussain col 7, ll 15-19; col 10, ll 1-3: TCM: two rate TCM disclosed))

It would have been obvious to one of ordinary skill in the art to modify For selecting the TCM algorithm from the group consisting of a single rate TCM, a two rate TCM, or a combination as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 5**, Crinion discloses the switching device of claim 2.

Crinion does not explicitly disclose a traffic shaper comprising meter module and discard control logic.

However, Hussain discloses a traffic shaper comprising:

- a) a meter module for determining a flow rate associated with the frames received from the network processor; (Hussain col 2, ll 32-36; col 2, ll 41-44: processor utilized to determine a packet flow rate (bandwidth)) and

- b) a discard control logic for selectively discarding the one or more frames based upon the flow rate and the one or more bandwidth parameters. (Hussain col 9, ll 57-61; col 10, ll 14-16: drop (discard) frames selectively (based on criteria))

It would have been obvious to one of ordinary skill in the art to modify For a meter module for determining a flow rate associated with the frames received and a discard control logic for selectively discarding the one or more frames based upon the flow rate and the one or more bandwidth parameters as taught by Hussain.

One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 6**, Crinion discloses the switching device of claim 5. Crinion does not explicitly disclose a marker module for marking the plurality of frames in accordance with a TCM algorithm. However, Hussain discloses wherein the traffic shaper further comprises a marker module for marking the plurality of frames in accordance with a TCM algorithm. (Hussain col 7, ll 15-19; col 10, ll 1-3: mark frames based on TCM algorithm (discard, do not discard))

It would have been obvious to one of ordinary skill in the art to modify For marking the plurality of frames in accordance with a TCM algorithm as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with

network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 7**, Crinion discloses the switching device of claim 6. Crinion does not explicitly disclose one or more bandwidth parameters comprising a committed information rate (CIR) and an excess burst size (EBS). However, Hussain discloses wherein the one or more bandwidth parameters comprise a committed information rate (CIR) and an excess burst size (EBS). (Hussain col 2, ll 64-67: committed information rate (CIR); col 10, ll 3-8: peak (excess) burst size: equivalent 2 burst sizes (committed, peak (excess)))

It would have been obvious to one of ordinary skill in the art to modify Crinion to enable the capability for bandwidth parameters committed information rate (CIR) and excess (peak) burst size (EBS) as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 8**, Crinion discloses the switching device of claim 2. Crinion does not explicitly disclose classifying frames based upon one or more properties associated with the frames. However, Hussain discloses wherein the traffic shaper comprises a flow search engine for classifying frames from the network processor based upon one or

more properties associated with the frames. (Hussain col 8, ll 56-62; col 7, ll 62-64: flow classification for packets using header information (properties of packet))

It would have been obvious to one of ordinary skill in the art to modify For classifying frames based on frame properties as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 9**, Crinion discloses the switching device of claim 8, wherein the flow search engine comprises a content addressable memory (CAM). (Col 1, ll 52-54; col 2, ll 55-57; col 3, ll 3-4: CAM utilized in data frame processing)

**Regarding Claim 10**, Crinion discloses the switching device of claim 9, wherein the CAM associated with each of the plurality of data link layer processors consists of QoS rules pertaining to the associated plurality of physical layer interfaces. (Col 1, ll 47-49; col 3, ll 26-27: set priority, determination of quality of service (QoS) for data frame(s))

**Regarding Claim 11**, Crinion discloses the switching device of claim 2, wherein data link layer processors are media access controller (MAC) processors. (Col 8, ll 26-28; col 5, ll 66-67; col 6, ll 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet, 802.3 LAN users) access for data frames)

**Regarding Claim 12**, Crinion discloses the switching device of claim 2, wherein the switching device is selected from the group consisting of: a router, a multi-layer switching device, and a switch blade. (Col 2, ll 50-51; col 4, ll 45-48: switch (switching device))

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyung Hye Shin whose telephone number is (571)272-3920. The examiner can normally be reached on 9:30 am - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tonia L. Dollinger can be reached on (571) 272-4170. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kyung Hye Shin  
Examiner  
Art Unit 2443

KHS  
February 25, 2009

/J Bret Dennison/

Primary Examiner, Art Unit 2443